HARDWARE REFERENCE

Gateway Computer

Gateway®

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CHAPTER 1
About This Reference

- Accessing the User Guide
- Gateway contact information
- Microsoft Certificate of Authenticity

About this guide

This guide includes information and maintenance instructions that are specific to your model of Gateway computer. For all other computer information, see your online *User Guide*.

Accessing the User Guide

In addition to this guide, the *User Guide* has been included on your hard drive. The *User Guide* is an in-depth, easy-to-read manual that includes information on the following topics:

- Help and technical support
- Setting up and starting your computer
- Using and customizing Windows and other software
- Controlling audio and video settings
- Using the Internet
- Protecting your files
- Playing and recording media
- Networking
- Maintenance and troubleshooting
- Legal notices

To access the *User Guide*:

- Click **Start**, **All Programs**, then click **Gateway Documentation**.

Gateway contact information

The label on the side of your computer case contains information that identifies your computer model and serial number. Gateway Customer Care will need this information if you call for assistance.

Microsoft Certificate of Authenticity

The Microsoft Certificate of Authenticity label found on the back or side of your computer includes the product key code for your operating system. If you ever reinstall Windows from the installation CD or DVD, you will need to enter these numbers to activate Windows.

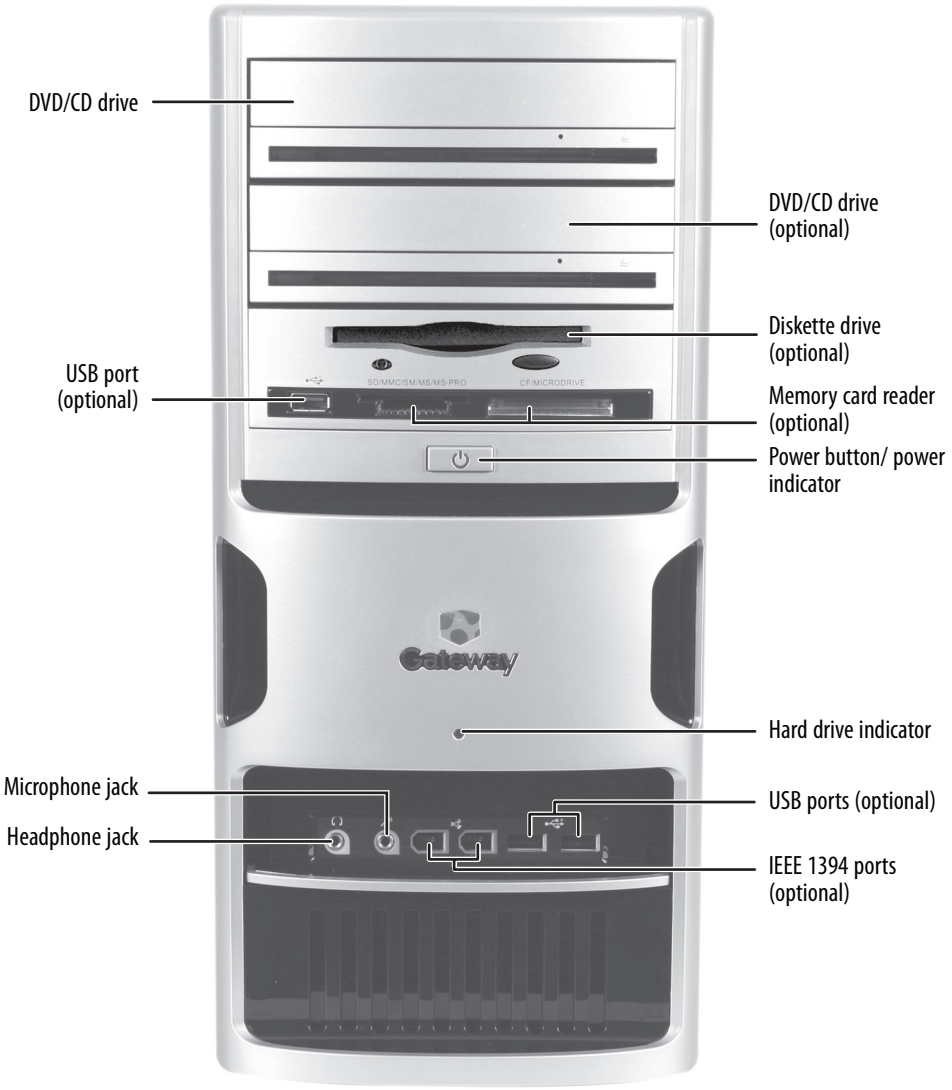
CHAPTER 2
Hardware Features

- Front
- Back

Front

Important

Your computer hardware options and port locations may vary from the illustration below.



Component	Icon	Description
DVD/CD drive		Use this drive to listen to audio CDs, install games and programs, watch DVDs, and store large files onto recordable discs (depending on drive type). This drive may be a CD, recordable CD, DVD, or recordable DVD drive. To identify your drive type and for more information about your drive, see your user guide.
USB ports (optional)		Plug a USB (Universal Serial Bus) device (such as a USB Iomega™ Zip™ drive, printer, scanner, camera, keyboard, or mouse) into one of these ports. For more information, see your user guide.

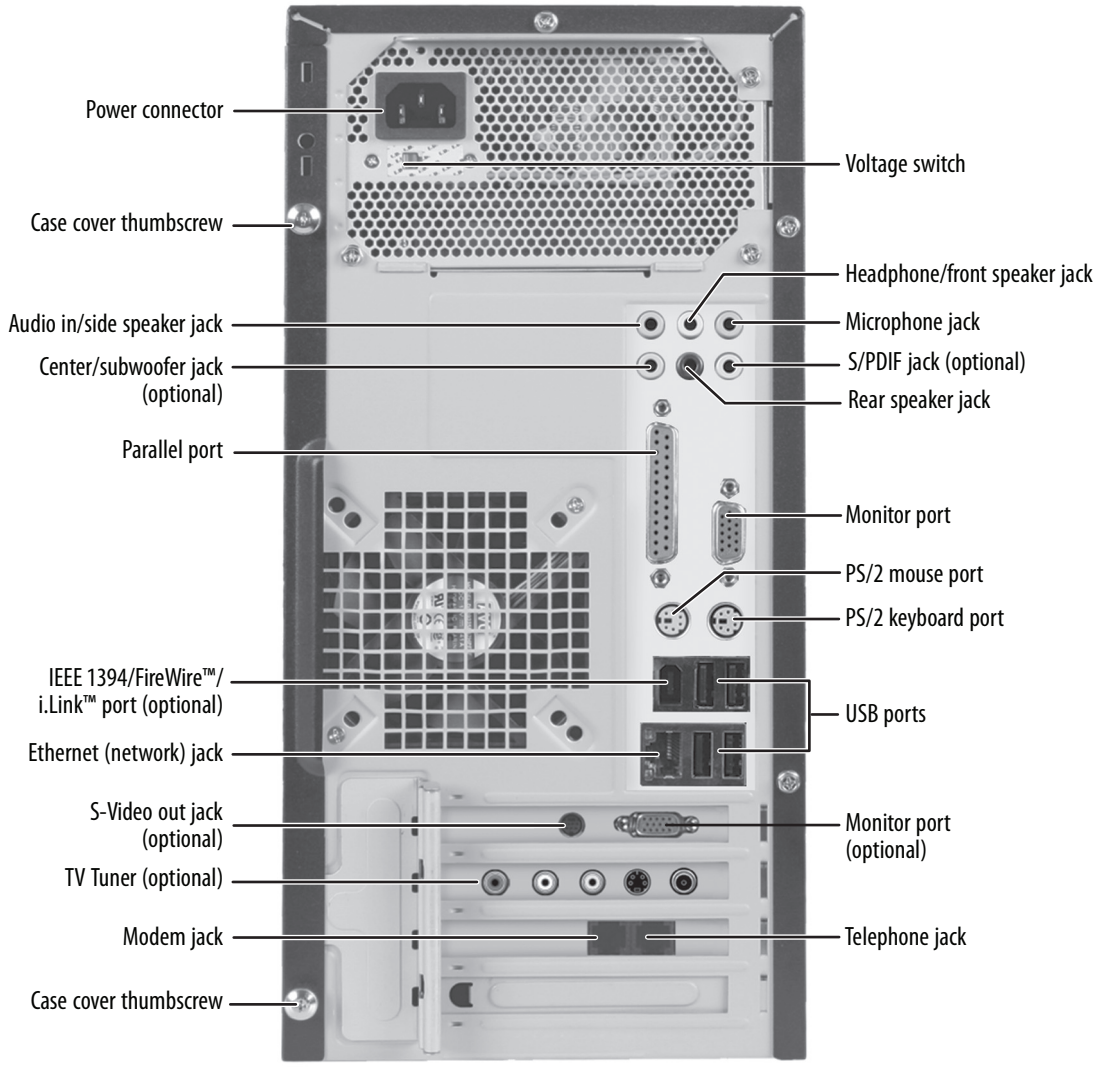
Component	Icon	Description
Diskette drive (optional)		Insert a standard 3.5-inch diskette into the optional diskette drive.
Memory card reader (optional)		Insert a memory card from a digital camera, MP3 player, PDA, cellular telephone, or other devices into the memory card reader.
Power button and power indicator		Press this button to turn the power on or off. You can also configure the power button to operate in Standby/Resume mode or Hibernate mode. The power indicator lights when the computer is turned on.
Hard drive indicator		Lights when the hard drive is in use.
IEEE 1394 ports (optional)		Plug IEEE 1394 (also known as Firewire® or i.Link®) devices (such as a digital camcorder) into these 6-pin IEEE 1394 ports. For more information, see your user guide.
Headphone jack		Plug powered, analog front speakers, an external amplifier, or headphones into this jack. This jack is color-coded orange.
Microphone jack		Plug a microphone into this jack. This jack is color-coded red or pink.

Back

Your computer includes the following components.

Important

Your computer hardware options and port locations may vary from the illustration below.



Component	Icon	Description
Power connector		Plug the power cord into this connector.
Case cover thumbscrews		Remove these screws before opening the case.

Component	Icon	Description
Audio input (Line in) jack (blue plug) -OR- Side speaker jack		If the back of your computer has five audio jacks, this jack is user configurable for one of the following: **Stereo in:** Plug an external audio input source (such as a stereo) into this jack so you can record sound on your computer (**Default**). **Stereo out:** Plug your side left and right speakers into this jack. For information on configuring this jack, see your user guide. If the back of your computer has three audio jacks, this jack is the audio input (line in) jack. Plug an external audio input source (such as a stereo) into this jack so you can record sound on your computer.
Center/subwoofer jack (orange plug) (optional)		Plug your center speaker and subwoofer into this optional jack. For information on configuring this jack, see your user guide.
Parallel port		Plug a parallel device (such as a printer) into this port. For more information, see your user guide.
IEEE 1394 ports		Plug IEEE 1394 (also known as Firewire® or i.Link®) devices (such as a digital camcorder) into these 6-pin IEEE 1394 ports. For more information, see your user guide.
Ethernet (network) jack		Plug an Ethernet network cable or a device (such as a DSL or cable modem for a broadband Internet connection) into this jack. For more information, see "Learning about the Internet" in your *User Guide* which has been included on your hard drive. To access this guide, click **Start**, **All Programs**, then click **Gateway Documentation**.
S-Video (TV) out jack (optional)		Plug a standard S-Video device (such as a television) into this optional jack. Plug the other end of the cable into an S-Video jack on a television.
Modem jack		Plug a modem cable into this jack. For more information on modems, see your user guide.
Voltage switch		Before turning on your computer, make sure that this switch is in the correct position for the correct power available. The switch is preset at the factory with the correct voltage for your area. In the United States, the utility power is supplied at a nominal 115 volts at 60 Hz. The power supply should always be set to this when your computer is operating in the United States. In other areas of the world, such as Europe, the utility power is supplied at 230 volts at 50 Hz. If your computer is operating in an environment such as this, the voltage switch should be moved to 230.
Headphone/analog speakers jack (green plug) -OR- Front speakers jack		If the back of your computer has five audio jacks, this jack is user configurable for one of the following: **Headphone:** Plug headphones or amplified speakers into this jack (**Default**). **Stereo out:** Plug your front left and right speakers into this jack. For information on configuring this jack, see your user guide. If the back of your computer has three audio jacks, this jack is the headphone/analog speaker (line out) jack. Plug powered speakers, an external amplifier, or headphones into this jack.
Microphone jack (pink plug)		Plug a microphone into this jack.
S/PDIF optical audio jack (optional)		Plug an S/PDIF optical audio connection to this jack.

Component	Icon	Description
Rear speaker jack (black plug) (optional)		Plug your rear right and left speakers into this optional jack. For information on configuring this jack, see your user guide.
Monitor port		Plug a monitor into this port.
PS/2 mouse port		Plug a PS/2 mouse into this port.
PS/2 keyboard port		Plug a Personal System/2® (PS/2) keyboard into this port.
USB ports		Plug USB (Universal Serial Bus) devices (such as a USB Iomega™ Zip™ drive, printer, scanner, camera, keyboard, or mouse) into these ports. For more information, see your user guide.

CHAPTER 3
Maintenance Basics

- Preventing static electricity discharge
- Opening the case
- Closing the case
- Installing memory
- Replacing the system battery
- Adding or replacing a CD or DVD drive
- Replacing the memory card reader
- Adding or replacing a hard drive
- Replacing the front fan
- Replacing the rear fan
- Replacing the power supply
- Replacing the heat sink and processor
- Replacing the I/O board
- Adding or replacing an expansion card
- Replacing the system board

Preventing static electricity discharge

Warning

To avoid exposure to dangerous electrical voltages and moving parts, turn off your computer and unplug the power cord and modem and network cables before opening the case.

Caution

ESD can permanently damage electrostatic discharge-sensitive components in your computer. Prevent ESD damage by following ESD guidelines every time you open the computer case.

Warning

To prevent risk of electric shock, do not insert any object into the vent holes of the power supply.

The components inside your computer are extremely sensitive to static electricity, also known as *electrostatic discharge* (ESD).

Before opening the computer case, follow these guidelines:

- Turn off your computer.
- Wear a grounding wrist strap (available at most electronics stores) and attach it to a bare metal part of your computer.
- Touch a bare metal surface on the back of the computer.
- Unplug the power cord and the modem and network cables.

Before working with computer components, follow these guidelines:

- Avoid static-causing surfaces such as carpeted floors, plastic, and packing foam.
- Remove components from their antistatic bags only when you are ready to use them. Do not lay components on the outside of antistatic bags because only the inside of the bags provide electrostatic protection.
- Always hold expansion cards by their edges or their metal mounting brackets. Avoid touching the edge connectors and components on the cards. Never slide expansion cards or components over any surface.

Opening the case

Your computer case provides easy access to internal components.

Removing the side panel

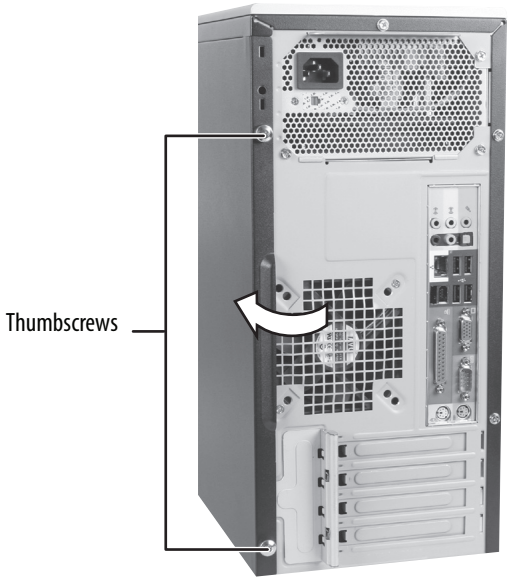
Warning

To avoid exposure to dangerous electrical voltages and moving parts, turn off your computer, then unplug the power cord and modem cable before opening the case.

To remove the side panel:

1. Follow the instructions in "Preventing static electricity discharge" on page 12.
2. Shut down your computer, then disconnect the power cord and modem, network, and all peripheral device cables.
3. Press the power button for ten seconds to drain any residual power from your computer.

4 Remove the two thumbscrews on the side panel cover.

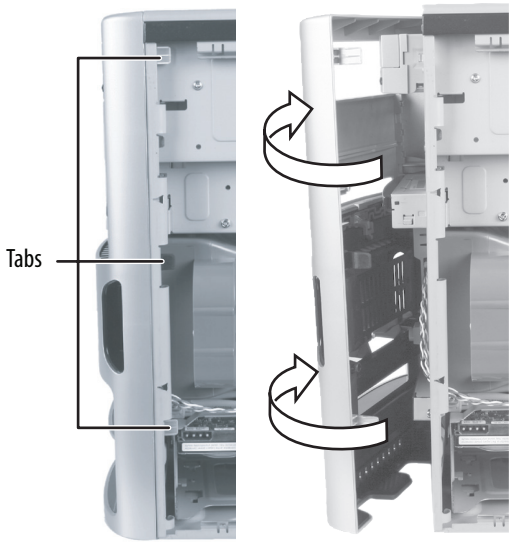


5 Swing the side panel away from the back of your computer, then pull the panel off.

Removing the front bezel

To remove the front bezel:

- Press the three bezel retention tabs, then swing the right side of the front bezel away from the computer and remove it.



Closing the case

Replacing the front bezel

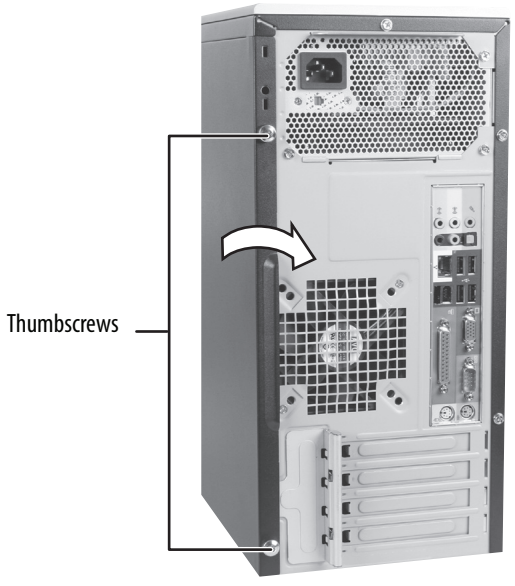
To replace the front bezel:

1. Slide the tabs on the left side of the bezel into the slots in the left side of the computer.
2. Swing the right side of the bezel in to insert the tabs on the right side of the bezel into the slots on the right side of the computer.
3. Press the right side of the bezel firmly until it snaps into place.

Replacing the side panel

To replace the side panel:

1. Make sure that all of the internal cables are arranged inside the computer so they will not be pinched when you close the computer.
2. Insert the front edge of the side panel into the inside front edge of the computer, then swing the side panel in toward the back of the computer to secure it into place.



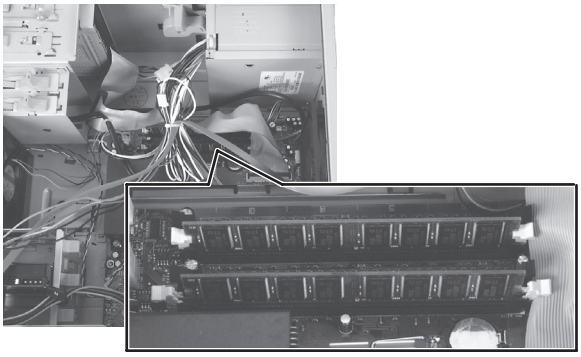
3. Replace the side panel thumbscrews.
4. Reconnect the cables and power cord.

Installing memory

When you upgrade the computer memory, make sure that you install the correct type of memory module for your computer. Your computer uses DIMM memory.

To install or replace DIMM memory:

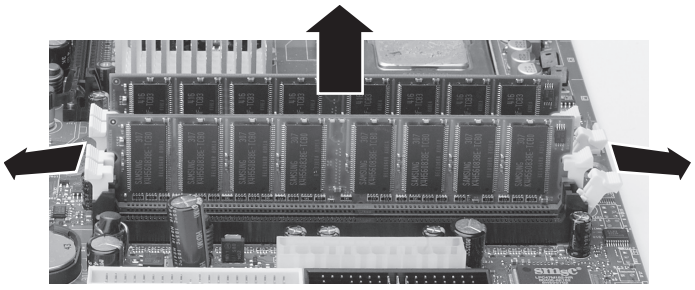
1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. For more stability, place your computer on its side. To avoid scratching the case, place it on a towel or other non-abrasive surface.
3. Find the memory module banks on your system board.



4. If you are removing a DIMM from the memory module bank, gently pull the plastic tabs away from the sides of the memory module and remove it.

   - OR -

   If you are adding a DIMM to an empty memory module bank, gently pull the plastic tabs away from the sides of the memory module bank.



5. Align the notches on the new DIMM with the notches on the memory module bank and press the module firmly into the bank. The tabs on the sides of the memory module should secure the memory module automatically. When the module is secure, you hear a click.
6. Replace the side panel by following the instructions in "Replacing the side panel" on page 14.
7. Return your computer to its upright position.
8. Reconnect the cables and the power cord.

9 Turn on your computer. Windows starts and the Windows desktop appears.

10 Click **Start**, **Control Panel**, then click **Performance and Maintenance** (if in Category view). Click/Double-click **System**. The amount of memory in your computer is shown at the bottom of the *System Properties* dialog box in the General tab.

Replacing the system battery

Warning

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries following the manufacturer's instructions.

If the computer clock does not keep time or the settings in the BIOS Setup utility are not saved when you turn off your computer, replace the system battery. Use a battery of the same size and voltage as the original battery that was in your computer.

To replace the battery:

1 Restart your computer.

2 During the restart, press and hold the **F1** key. The main menu of the BIOS Setup utility opens.

3 Write down all the values in the menus and submenus, then exit from the utility.

4 Shut down your computer.

5 Remove the side panel by following the instructions in "Removing the side panel" on page 12.

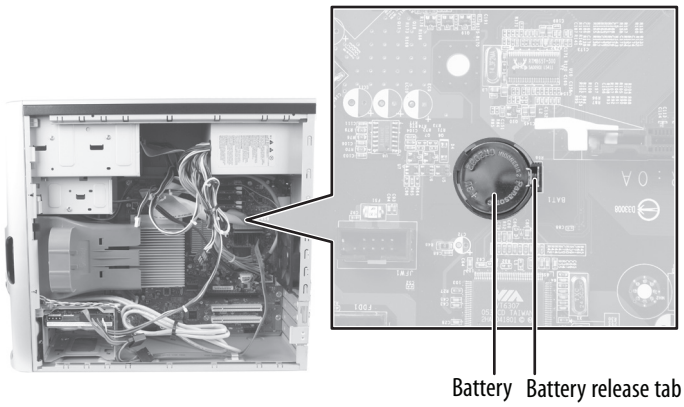
6 For more stability, place your computer on its side. To avoid scratching the case, place it on a towel or other non-abrasive surface.

Important

Your computer's battery location may vary from the illustration below.

7 Locate the old battery on the system board and note its orientation. You will need to install the new battery the same way.

8 Push the battery release tab. The battery pops out of the socket.



9 Make sure that the positive (+) side of the new battery is facing up, then press the battery into the socket until it snaps into place.

10 Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

11 Reconnect all external cables and the power cord.

12 Turn on your computer.

13 Open the BIOS Setup utility.

14 In the BIOS Setup utility, restore any settings that you wrote down in Step 3.

15 Save all your settings and exit the BIOS Setup utility.

Adding or replacing a CD or DVD drive

Tips & Tricks

You need a Phillips screwdriver to add or replace a CD or DVD drive.

To add replace a CD or DVD drive:

1 Remove the side panel by following the instructions in "Removing the side panel" on page 12.

2 Remove the front bezel by following the instructions in "Removing the front bezel" on page 13.

Important

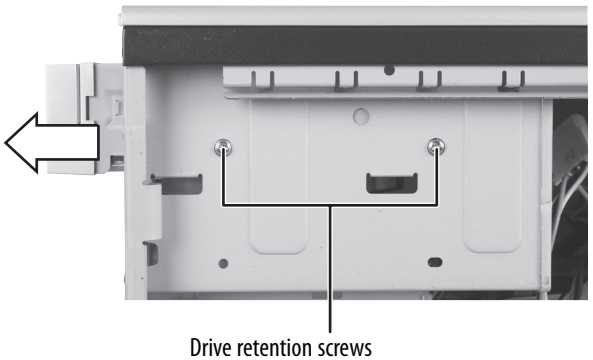
The color and shape of your replacement drive's front cover may vary from your original drive.

3 If you are installing a new drive (not replacing an old one), remove the two drive retention screws in the drive bay, then go to Step 7. For the location of the screws, see the photo in Step 6.

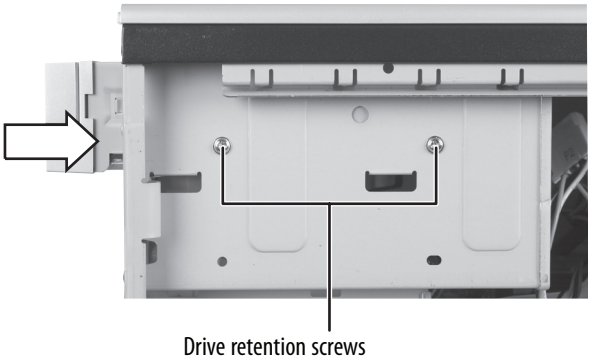
4 If you are replacing an existing drive, disconnect the cables from the drive, noting their locations and orientation. You will reconnect the cables after you install the new drive. (CD/DVD drive shown.)

5 Note any jumper settings on the old drive and set the jumper on the new drive to be the same.

6 Remove the two drive retention screws, then slide the drive forward and out of the drive bay.



7 Slide the new drive into the drive bay, line up the screw holes on the drive bay with the screw holes on the drive, then replace the two drive retention screws.



8 Reconnect the drive cables using your notes from Step 4.

9 Replace the front bezel by following the instructions in "Replacing the front bezel" on page 14.

10 Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

Replacing the memory card reader

Tips & Tricks

You need a Phillips screwdriver to replace the memory card reader.

To replace the memory card reader:

1 Remove the side panel by following the instructions in "Removing the side panel" on page 12.

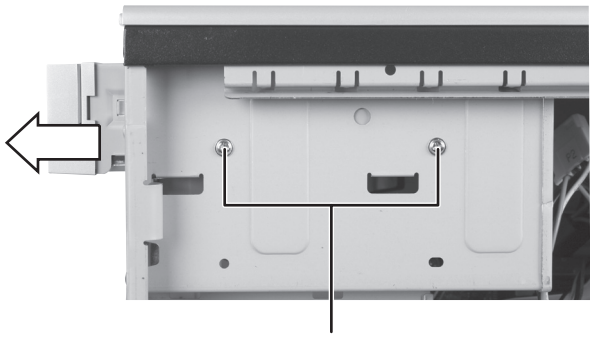
2 Remove the front bezel by following the instructions in "Removing the front bezel" on page 13.

Important

The color and shape of your replacement card reader's front cover may vary from your original card reader.

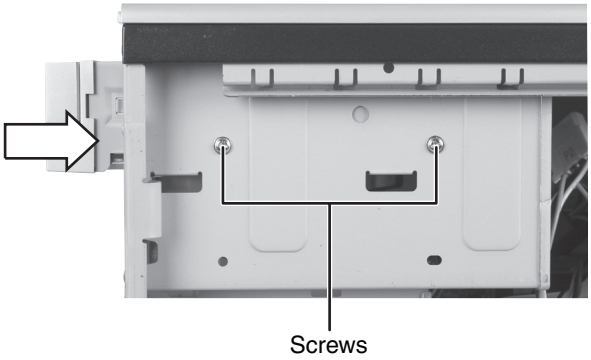
3 If you are installing a new card reader (not replacing an old one), remove the two drive retention screws in the drive bay, then go to Step 6. For the location of the screws, see the photo in Step 4.

4 Remove the screws holding the card reader in the drive bay, then disconnect the card reader's data cable from the system board.



5 Slide the card reader out of the case.

6 Slide the new card reader into the bay from the front of the case.



7 Use the screws you removed previously to secure the card reader to the bay.

8 Connect the new card reader's data cable to the system board.

9 Reinstall the bezel by following the instructions in "Replacing the front bezel" on page 14.

10 Reinstall the computer case's side panel by following the instructions in "Replacing the side panel" on page 14.

Adding or replacing a hard drive

Tips & Tricks

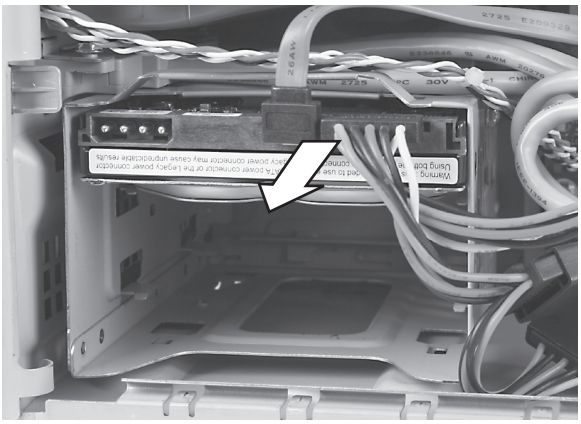
You need a Phillips screwdriver to add or replace a hard drive.

To add or replace a hard drive:

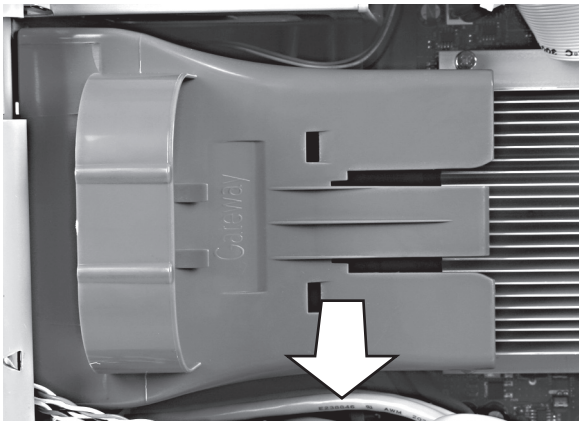
1 Remove the side panel by following the instructions in "Removing the side panel" on page 12.

2 If you are adding a new drive, go to Step 4. If you are replacing an existing drive, go to the next step.

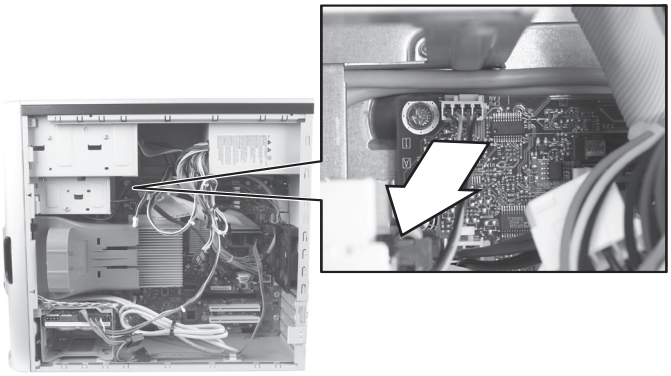
3 Disconnect the drive cables, noting their locations and orientation. (You will reconnect the cables after you install the new drive.)



4 Pull the front fan assembly away from the system board, then remove it.

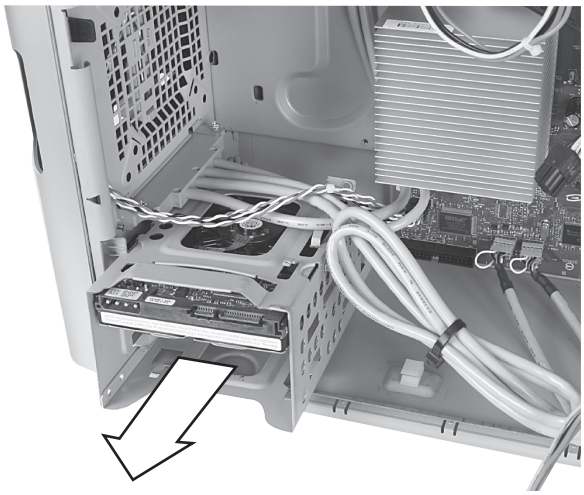


5 Disconnect the fan cable from the system board.



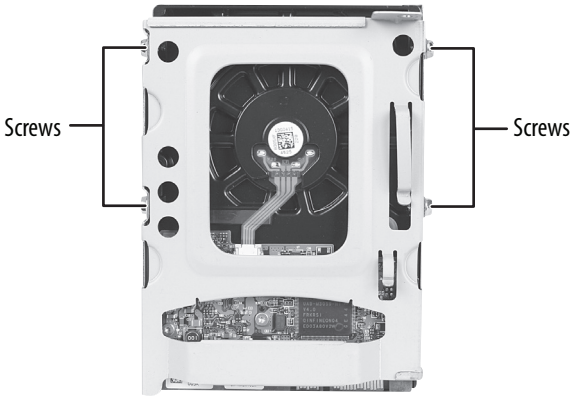
6 Remove the hard drive bay screw.

7 Remove the hard drive bay from your computer. You may need to work the bay out of your computer by rocking the bay back and forth.

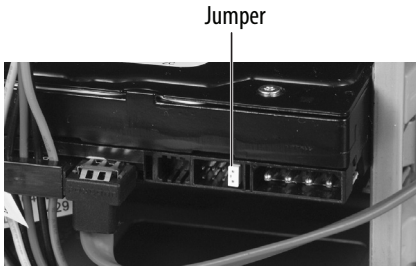


8 If you are adding a new drive (not replacing an old one), remove the four screws (two on each side) from the empty hard drive bay, then go to Step 11.

9 If you are replacing an old drive, remove the four screws that secure the hard drive to the hard drive bay, then remove the hard drive from the bay.

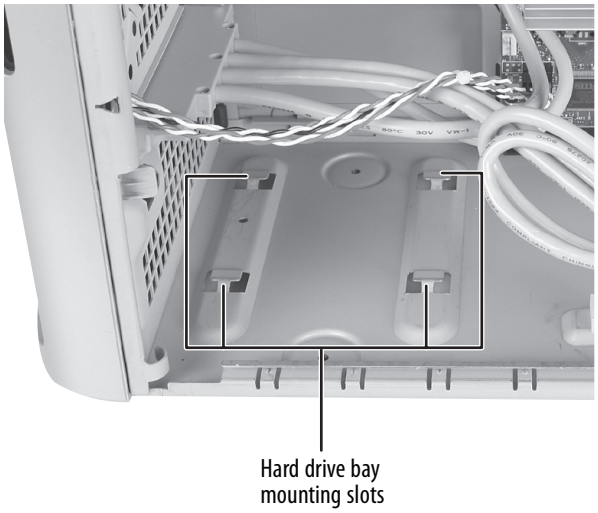


10 Note any jumper settings on the old drive and set the jumper on the new drive to be the same.



11 Slide the new drive into the drive bay, then secure the drive to the bay using the four screws you removed previously.

12 Slide the drive bay back into your computer, making sure that the tabs on the bottom of the bay align with and slide into the slots on the bottom of your computer.



13 Secure the drive bay to your computer using the screw you removed previously.

14 Connect the drive cables. If you are replacing a drive, use your notes from Step 3.

15 Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

16 Reconnect all external cables and the power cord.

17 Turn on your computer.

18 If Windows does not start, install Windows using the operating system CD that came with your computer, then install the drivers and applications by following the directions in "Recovering Your System" in your *User Guide*. Follow any instructions that may be printed on the operating system CD.

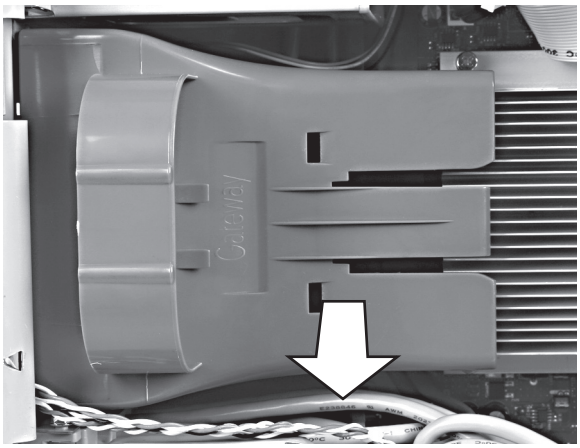
Replacing the front fan

Tips & Tricks

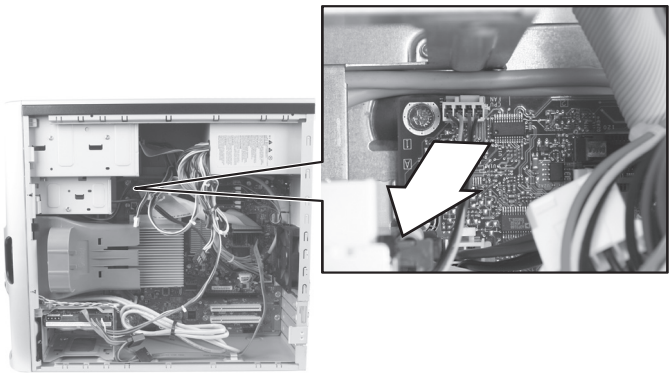
You need a Phillips screwdriver to replace the front fan.

To replace the front fan:

1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. Pull the front fan away from the system board, then remove it.



3. Disconnect the fan cable from the system board.



4. Connect the new fan cable to the system board, then insert the new fan into place.
5. Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

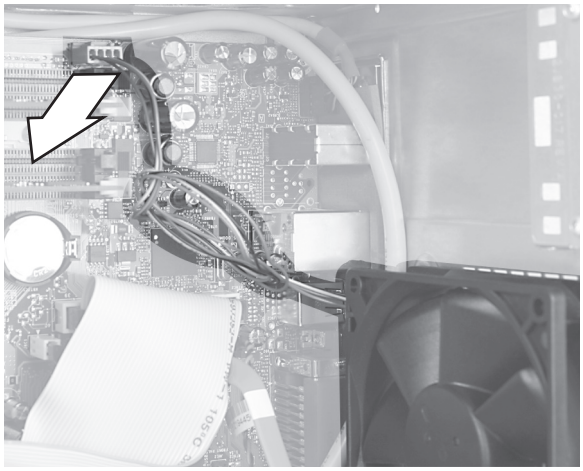
Replacing the rear fan

Tips & Tricks

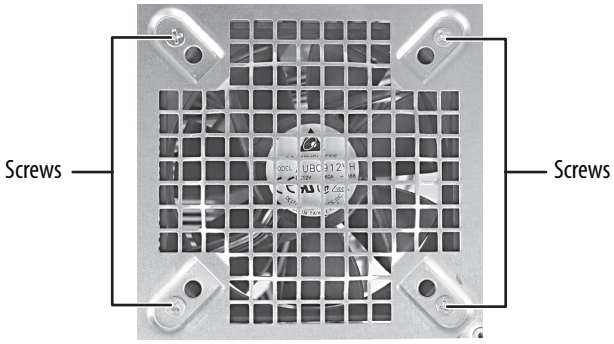
You need a Phillips screwdriver to replace the rear fan.

To replace the rear fan:

1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. Disconnect the fan from the system board.



3. Remove the four screws on the outside of the case that secure the fan to the back of the case, then remove the fan.



4. Place the new fan on the back of your computer, then replace the screws that secure it to the back cover.
5. Reconnect the fan cable to the system board.
6. Replace the side panel by following the instructions in "Replacing the side panel" on page 14.
7. Reconnect all external cables and the power cord.
8. Turn on your computer.

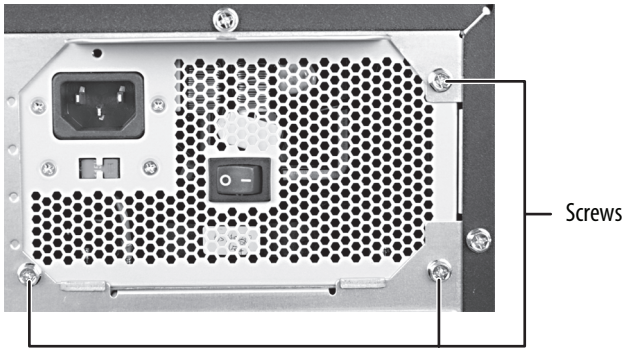
Replacing the power supply

Tips & Tricks

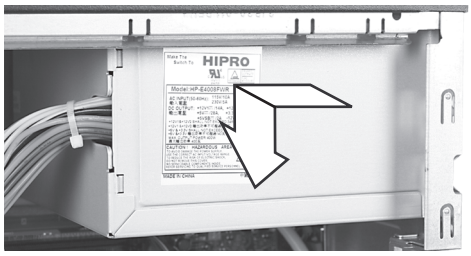
You need a Phillips screwdriver to replace the power supply.

To replace the power supply:

1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. Disconnect the power supply cables from all components (such as hard drives, CD or DVD drives, and the system board), noting their locations and orientation. (You will reconnect the cables after you install the new power supply.)
3. Remove the three screws that secure the power supply to your computer.



4. Slide the power supply away from the back of your computer, then pull it down and remove it.



5. Install the new power supply into the case, then install the three screws to secure the power supply to the case.
6. Reconnect the power supply cables using your notes from Step 2.
7. Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

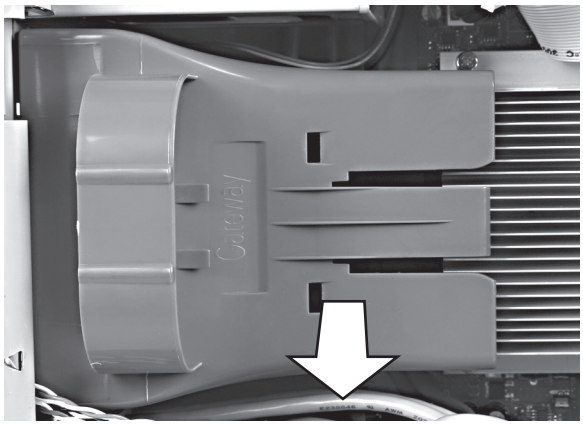
Replacing the heat sink and processor

Tips & Tricks

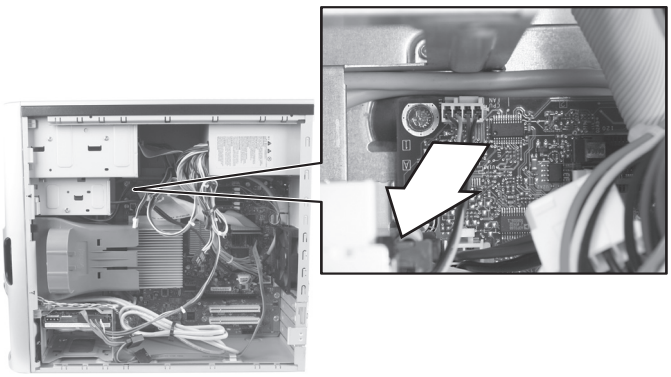
You need a Phillips screwdriver to replace the heat sink.

To replace the heat sink and processor:

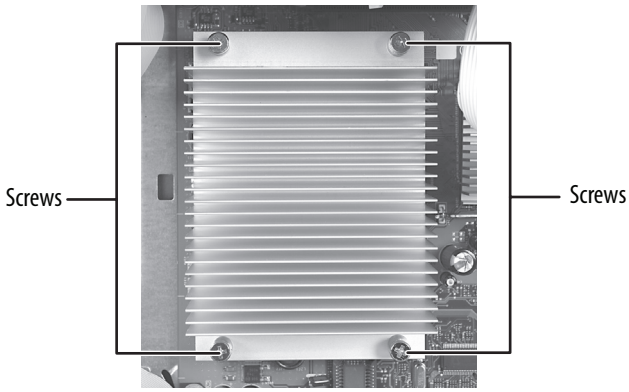
1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. For more stability, place your computer on its side. To avoid scratching the case, place it on a towel or other non-abrasive surface.
3. Pull the front fan away from the system board, then remove it.



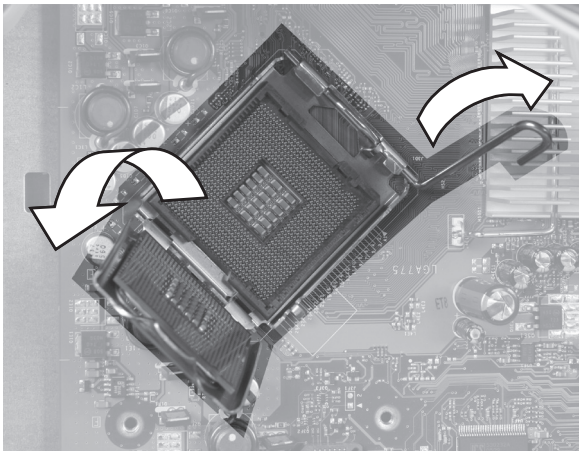
4. Disconnect the fan cable from the system board.



5 Loosen the four screws that secure the heat sink to the system board, then remove the heat sink and place it on a stable surface with the flat surface of the heat sink (the side with the thermal grease) up.



6 Release the processor by pushing down on the lever and then lifting it completely up.



7 Remove the processor from the system board.

8 Install the new processor onto the system board making sure that Pin 1 on the processor (indicated by the silk-screened arrow on the corner of the processor) aligns with Pin 1 on the processor socket (indicated by the absence of a pin hole in the processor socket), then return the lever to its locked position.

9 Place the heat sink on the system board, then tighten the screws that secure it to the system board.

10 Connect the fan cable to the system board, then insert the fan into place.

11 Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

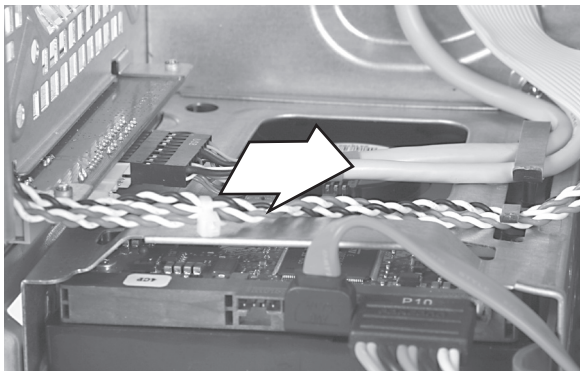
Replacing the I/O board

Important

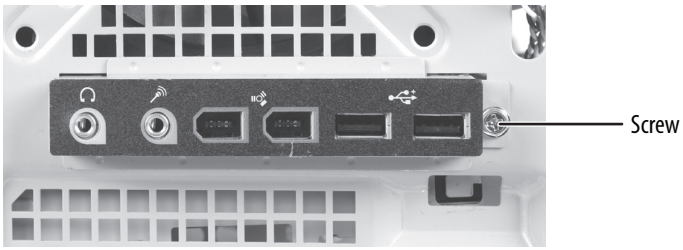
The color and shape of your replacement I/O panel may vary from your original I/O panel..

To replace the front I/O panel:

1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. Remove the bezel by following the instructions in "Removing the front bezel" on page 13.
3. Disconnect the cable from the I/O panel.



4. Remove the screw that secures the I/O panel to your computer, then remove the I/O panel from your computer.

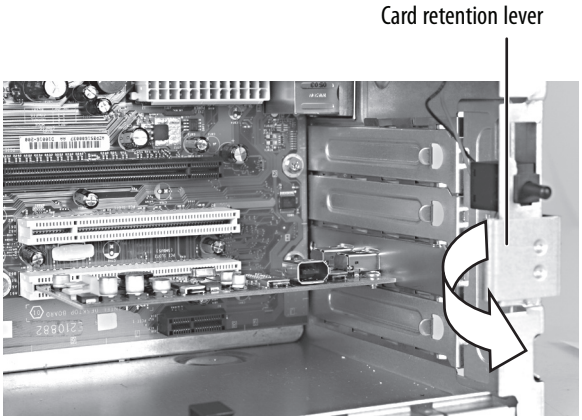


5. Insert the new I/O panel into your computer, then replace the screw.
6. Connect the I/O panel cable to the new I/O panel.
7. Replace the front bezel by following the instructions in "Replacing the front bezel" on page 14.
8. Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

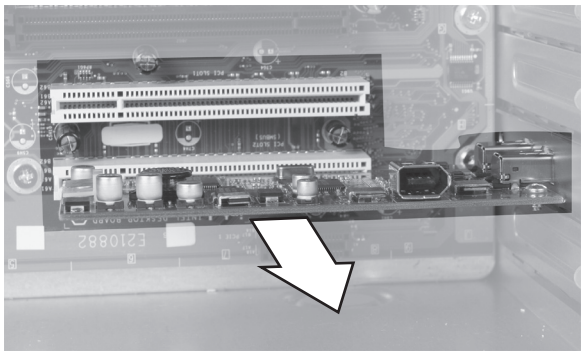
Adding or replacing an expansion card

To add or replace an expansion card:

1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. If you are adding a new expansion card, go to the next step. If you are replacing an expansion card, go to Step 5.
3. Disconnect any cables that are attached to the card, noting their locations and orientation. (You may need to reconnect the cables after you install the new card.)
4. Open the card retention lever.



5. Remove the old expansion card. You can slightly seesaw the card end-to-end to loosen the card, but do not bend the card sideways.



Caution

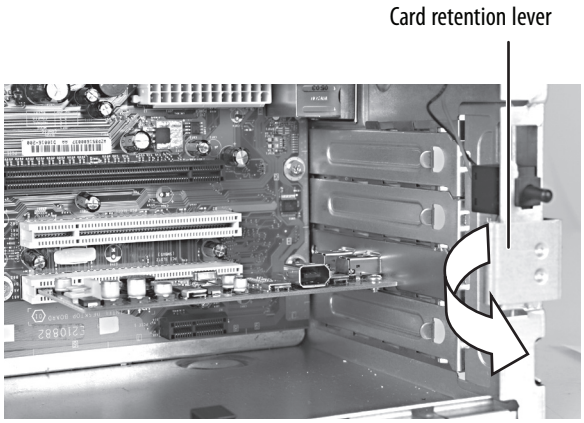
Do not touch the contacts on the bottom part of the expansion card. Touching the contacts can cause electrostatic damage to the card.

6. Install the new card into the expansion slot. You can slightly seesaw the card end-to-end to help insert the card, but do not bend the card sideways.
7. Reconnect the expansion card cables (if any) using your notes from Step 3.
8. Replace the side panel.

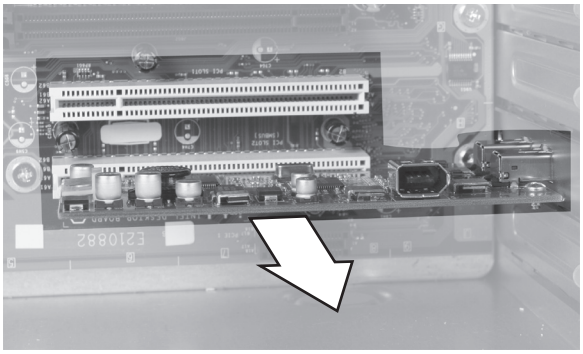
Replacing the system board

To replace the system board:

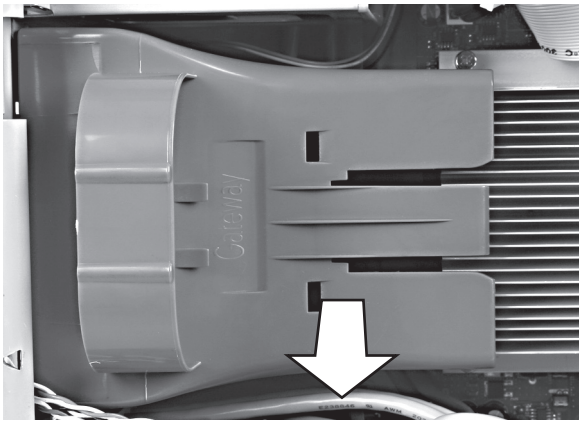
1. Remove the side panel by following the instructions in "Removing the side panel" on page 12.
2. Disconnect any expansion card cables from the cards and from the system board, noting their locations and orientation. (You will reconnect the cables after you reinstall the cards.) You can also mark the cables with tape labels to simplify reconnecting cables later.
3. Open the card retention lever.



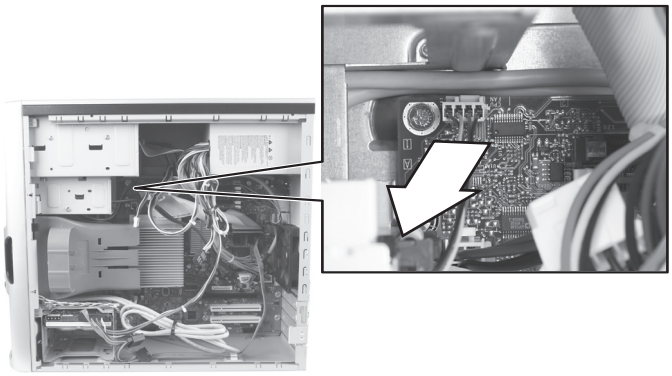
4. Remove any expansion cards. You can slightly seesaw the card end-to-end to loosen the card, but do not bend the card sideways.



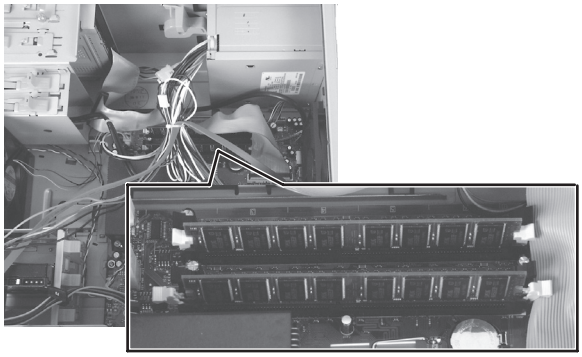
5 Pull the front fan away from the system board, then remove it.



6 Disconnect the fan cable from the system board.



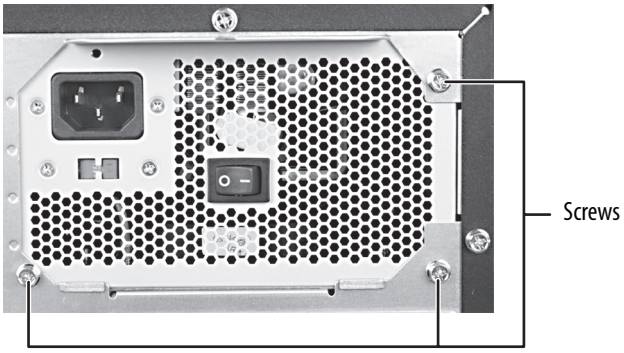
7 Find the memory module banks on your system board.



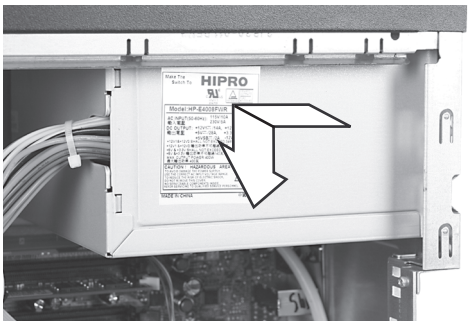
8 Gently pull the plastic tabs away from the sides of the memory modules, then remove them.

9 Disconnect the power and data cables from the system board, noting their locations and orientation. (You will reconnect the cables after you install the new board.)

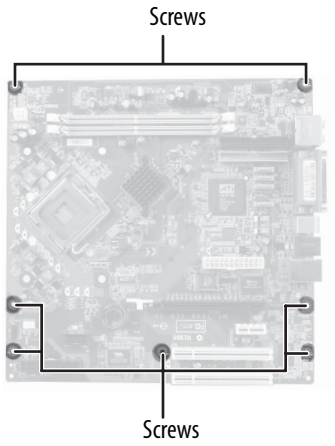
10 Remove the three screws that secure the power supply to your computer.



11 Slide the power supply away from the back of your computer, then pull it down and remove it.



12 Remove the seven system board screws.



13 Lift the system board up and out of the case.

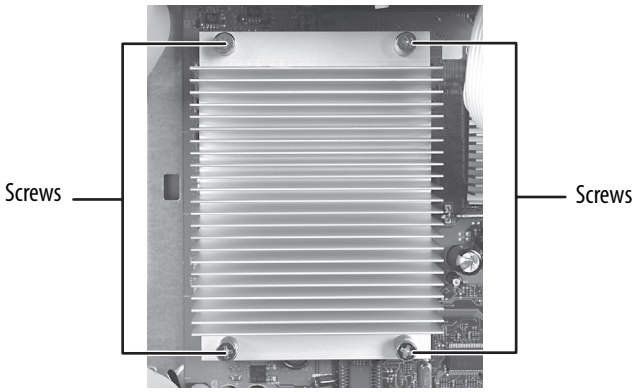
14 Align the new system board on the screw holes in the case, then secure it into the case with the screws.

15 If your replacement system board does not include a processor, go to Step 16.

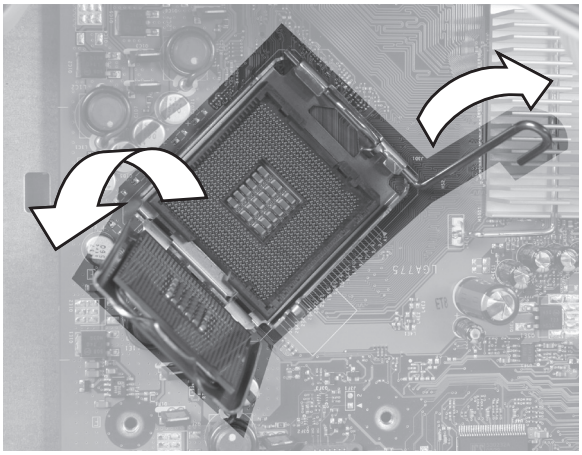
-OR-

If your replacement system board includes a processor, go to Step 20.

16 Loosen the four screws that secure the heat sink to the system board, then remove the heat sink and place it on a stable surface with the flat surface of the heat sink (the side with the thermal grease) up.



17 Release the processor from the old system board by pushing down on the lever and then lifting it completely up.



18 Remove the processor from the old system board.

19 Install the processor onto the new system board making sure that Pin 1 on the processor (indicated by the silk-screened arrow on the corner of the processor) aligns with Pin 1 on the processor socket (indicated by the absence of a pin hole in the processor socket), then return the lever to its locked position.

20 Install the power supply into the case, then install the three screws to secure the power supply to the case.

21 Connect the power and data cables using your notes from Step 9.

22 Place the heat sink over the processor, then tighten the screws that secure it to the system board.

23 Connect the fan cable to the system board, then insert the fan into place.

24 Install the memory you removed previously.

25 Reinstall any expansion cards you removed.

26 Replace the side panel by following the instructions in "Replacing the side panel" on page 14.

CHAPTER 4
Configuring Drives for RAID

- About RAID
- Configuring RAID
- Getting help

About RAID

RAID (*Redundant Array of Inexpensive/Independent Disks*) lets your computer use multiple hard drives more efficiently. Your computer supports RAID 0, RAID 1, RAID 5, and RAID 10.

RAID for performance

RAID 0 lets your computer see multiple hard drives as a single drive. This type of RAID can increase file access speeds, which is important if you work with video editing, sound editing, and high-performance games. RAID 0 is also an affordable way to increase your total file storage capacity.

How it increases performance

The more drives you have in your RAID 0 array, the faster the potential drive reading performance. All hard drives have limitations on how fast they can read and write files. If half a file is stored on one RAID 0 drive and the other half on another RAID 0 drive, each drive only has to read half of the file. So, the entire file is accessed by the computer up to twice as fast (using a two-drive RAID 0 array). In a three-drive RAID 0 array, if the file is evenly distributed among the drives, each drive must read only a third of the file, and so on. If the entire file happens to be stored on only one of the drives, the file is accessed at the same speed as if it were on a standard hard drive setup. Dividing up files between multiple hard drives like this is called *striping*.

How it makes file storage cheaper

Because RAID 0 lets your computer see multiple hard drives as a single drive, you can install several lower capacity (less expensive) drives and have the same single-drive storage simplicity and capacity as a larger, more expensive hard drive.

Drawbacks

Unfortunately, RAID 0 lets multiple drives behave as one in another way. If part of the array fails (such as a hard drive crashing), the entire array fails. Because the drives are treated like a single drive, parts of files (including operating system files) can be spread across several drives, leaving the computer with only file fragments if one drive fails. Also, because it is more likely that a hard drive can fail in a multiple-drive RAID setup, regular and frequent backups are critical.

Another drawback is that RAID 0 treats each hard drive as if it has the storage capacity of the smallest drive in the array. So if you have three drives (300 GB, 250 GB, and 200 GB) in a RAID 0 array, your computer only recognizes 600 GB total capacity.

RAID for security

RAID 1 maintains a complete copy of a file set on each physical hard drive in the array. Because each hard drive has a full copy of all files, your data and applications are completely backed up. Maintaining simultaneous, complete copies of files across multiple hard drives is called *mirroring*.

File reading performance (*seek time*) is increased using the same methods that RAID 0 uses, although writing speed is the same as if writing to a single hard drive.

For maximum reliability, you can use a separate hard drive controller for each drive (called *splitting* or *duplexing*).

Drawback

RAID 1 treats the entire array as a single drive with the storage capacity of the smallest physical drive in the array. So if you have three drives (300 GB, 250 GB, and 200 GB) in a RAID 1 array, your computer only recognizes a single drive with 200 GB total capacity.

RAID for both: performance and security

RAID 5 uses mirroring across the drives, and striping (at the block level) with on-the-fly error correction across all drives. Because of this error correction, small file read/write errors can be quickly and automatically fixed without a significant drop in system performance. RAID 5 offers good performance and data redundancy.

RAID 10 (also called *RAID 1+0* or *RAID 1&0*) contains sets of RAID 1 mirrors acting as drives within a RAID 0 striping array. With this setup, all but one drive in the array can fail, and the RAID would still be providing necessary data to the computer.

Drawbacks

RAID 5 has the combined drawbacks of RAID 0 (one drive completely failing results in total data loss) and and RAID 1 (array treated as one drive with capacity of smallest physical drive).

RAID 10 treats the entire array as a single drive with the storage capacity of the smallest drive in the array. So if you have four drives (350 GB, 300 GB, 250 GB, and 200 GB) in a RAID 10 array, your computer only recognizes a single drive with 200 GB total capacity.

Configuring RAID

Enabling RAID

Although your computer is capable of using RAID, the RAID feature is not yet enabled.

To enable RAID on your computer:

1. Start (or restart) your computer.
2. As soon as your computer turns on and the Gateway logo appears on the screen, press **F2**. The BIOS Setup utility opens.
3. Select the **Advanced** menu, then select **Drive Configuration**.
4. Change the **ATA/IDE Mode** to **Enhanced**.
5. Change the **SATA** mode to **RAID**.
6. Press **F10**, then type **Y** to exit BIOS saving changes.

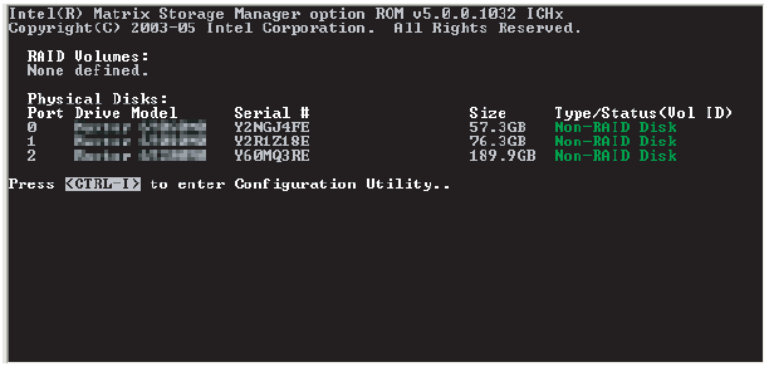
Now that RAID is enabled, you can access the RAID setup

Creating a RAID volume

Because RAID can be configured so many ways, this procedure covers only the basics.

To configure RAID:

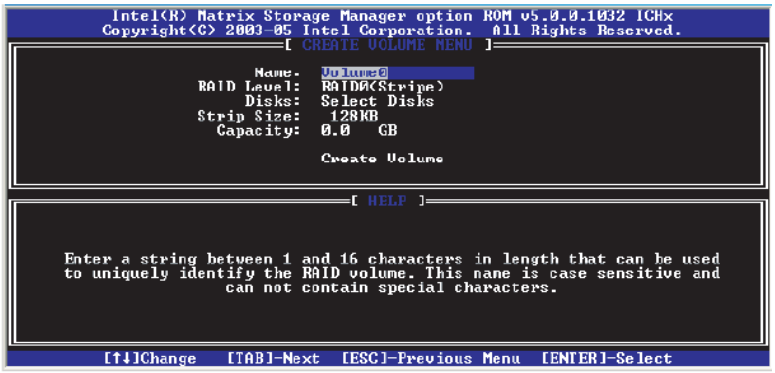
1. Start (or restart) your computer. During startup, the RAID option screen appears. (Number and specifications of your drives may vary from the example.)


Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICHx
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 Y2NGJ4FE 57.3GB Non-RAID Disk
1 Y2R1Z18E 76.3GB Non-RAID Disk
2 Y60MQ3RE 189.9GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility..

2 While the RAID option screen is open, press **CTRL+i**. The Matrix Storage Manager opens.

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICHx
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 57.3GB Non-RAID Disk
1 76.3GB Non-RAID Disk
2 189.9GB Non-RAID Disk
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

3 Highlight **1. Create RAID Volume**, then press **ENTER**. The CREATE VOLUME MENU opens.


Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICHx
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.
[↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

4 Change the following settings:

- **Name**—Type a volume name (up to 16 characters) or use the default name, then press **ENTER**.
- **RAID Level**—Press ↑ or ↓ to select the RAID level, then press **ENTER**.
- **Select Disks**—Press ↑ or ↓ to highlight drives, press the spacebar to select (mark with a green triangle) each drive to use in the array, then press **ENTER**. You must select a minimum of two drives.
- **Strip Size**—If you have selected RAID 0, RAID 5, or RAID 10, select the strip value for the array, then press **ENTER**. Defaults: 218 KB for RAID 0 and RAID 10, 64 KB for RAID 5. We recommend accepting the default strip value.
- **Capacity**—Type the volume capacity, or use the default capacity, then press **ENTER**. We recommend using the default value (the maximum capacity with the drives you selected).

5 Highlight **Create Volume**, then press **ENTER**. A warning appears.

6 Type **Y**. The RAID volume is created and the MAIN MENU opens.

7 Highlight **4. Exit**, then press **Enter**. You exit the Matrix Storage Manager, and your computer restarts.

Deleting a RAID volume

Deleting a RAID volume deletes all files on that volume, including operating system files.

To delete a RAID volume:

1. Start (or restart) your computer. During startup, the RAID option screen appears.
2. While the RAID option screen is open, press **CTRL+i**. The Matrix Storage Manager opens.
3. Highlight **2. Delete RAID Volume**, then press **ENTER**. The DELETE VOLUME MENU opens.
4. Press ↑ or ↓ to highlight the RAID volume you want to delete, then press **DELETE**. A warning message appears.
5. Type **Y** to confirm volume deletion.

Caution

If your computer boots to RAID (to load the operating system), deleting the RAID volume will remove the operating system, and you will not be able to start your computer.

Resetting drives to non-RAID status

To troubleshoot or recover incompatible RAID configurations, failed RAID volumes, or failed drives within a RAID volume, you can reset the drives to non-RAID status until the problems can be resolved.

To reset drives to non-RAID status:

1. Start (or restart) your computer. During startup, the RAID option screen appears.
2. While the RAID option screen is open, press **CTRL+i**. The Matrix Storage Manager opens.
3. Highlight **3. Reset Disks to Non-RAID**, then press **ENTER**. The RESET RAID DATA menu opens.
4. Press ↑ or ↓ to highlight drives, press the spacebar to select (mark with a green triangle) each drive you want to reset, then press **ENTER**. A warning message appears.
5. Type **Y** to confirm the drive reset.

Getting help

For more information on RAID concepts, configuration, and maintenance, search for RAID FAQ information on the *Gateway Technical Support* Web site (support.gateway.com) and the *Intel Support & Downloads* Web site (support.intel.com).

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